Amendment to the Claims:

Please amend the claims as follows:

Please cancel claims 1, 24, 33, 40, 45, 48, 60, 98, 100, 106, 126, 131, 141, 173, 175, 180, 181, 187, 203 to 205 and 209 to 214, without prejudice or disclaimer.

This listing of claims will replace all prior versions, and listing, of claims in the application:

Listing of Claims:

Claims 1 to 215 (canceled)

Claim 216 (new): A method for making a composition to treat a wood, a wood product, a wood pulp, a Kraft pulp, a paper, a paper product, a paper pulp, or a combination thereof, comprising

(a) providing a carrier;

(b) providing a xylanase which is active under conditions comprising a temperature of at least about 85°C and a basic pH of at least about pH 11,

(c) combining the carrier of (a) with xylanase of (b),

thereby producing a composition to treat a wood, a wood product, a wood pulp, a Kraft pulp, a paper, a paper product, a paper pulp, or a combination thereof.

Claim 217 (new): A method for making a composition to treat a wood, a wood product, a wood pulp, a Kraft pulp, a paper, a paper product, a paper pulp, or a combination thereof, wherein the composition is active under high temperature and basic pH conditions, comprising

(a) providing a carrier;

(b) providing a xylanase; and

(c) combining the carrier of (a) with xylanase of (b),

thereby producing a composition to treat a wood, a wood product, a wood pulp, a Kraft pulp, a paper, a paper product, a paper pulp, or a combination thereof, wherein the composition is active under high temperature and basic pH conditions.

Claim 218 (new): A composition made by the method of claim 216.

Claim 219 (new): The composition of claim 218, wherein the xylanase comprises

(a) a nucleic acid encoding at least one polypeptide having a xylanase activity, wherein the nucleic acid comprises a sequence having at least 50%, 51%, 52%, 53%, 54%, 55%, 56%, 57%, 58%, 59%, 60%, 61%, 62%, 63%, 64%, 65%, 66%, 67%, 68%, 69%, 70%, 71%, 72%, 73%, 74%, 75%, 76%, 77%, 78%, 79%, 80%, 81%, 82%, 83%, 84%, 85%, 86%, 87%, 88%, 89%, 90%, 91%, 92%, 93%, 94%, 95%, 96%, 97%, 98%, 99%, or more, or has 100% sequence identity to SEQ ID NO:1, SEQ ID NO:3, SEQ ID NO:5, SEQ ID NO:7, SEQ ID NO:9, SEQ ID NO:11, SEQ ID NO:13, SEQ ID NO:15, SEQ ID NO:17, SEQ ID NO:19, SEQ ID NO:21, SEQ ID NO:23, SEQ ID NO:25, SEQ ID NO:27, SEQ ID NO:29, SEQ ID NO:31, SEQ ID NO:33, SEQ ID NO:35, SEQ ID NO:37, SEQ ID NO:39, SEQ ID NO:41, SEQ ID NO:43, SEQ ID NO:45, SEQ ID NO:47, SEQ ID NO:49, SEQ ID NO:51, SEQ ID NO:53, SEQ ID NO:55, SEQ ID NO:57, SEQ ID NO:59, SEQ ID NO:61, SEQ ID NO:63, SEQ ID NO:65, SEQ ID NO:67, SEQ ID NO:69, SEQ ID NO:71, SEQ ID NO:73, SEQ ID NO:75, SEQ ID NO:77, SEQ ID NO:79, SEQ ID NO:81, SEQ ID NO:83, SEQ ID NO:85, SEQ ID NO:87, SEQ ID NO:89, SEQ ID NO:91, SEQ ID NO:93, SEQ ID NO:95, SEQ ID NO:97, SEQ ID NO:99, SEQ ID NO:101, SEQ ID NO:103, SEQ ID NO:105, SEQ ID NO:107, SEQ ID NO:109, SEQ ID NO:111, SEQ ID NO:113, SEQ ID NO:115, SEQ ID NO:117, SEQ ID NO:119, SEQ ID NO:121, SEQ ID NO:123, SEQ ID NO:125, SEQ ID NO:127, SEQ ID NO:129, SEQ ID NO:131, SEQ ID NO:133, SEQ ID NO:135, SEQ ID NO:137, SEQ ID NO:139, SEQ ID NO:141, SEQ ID NO:143, SEQ ID NO:145, SEQ ID NO:147, SEQ ID NO:149, SEQ ID NO:151, SEQ ID NO:153, SEQ ID NO:155, SEQ ID NO:157, SEQ ID NO:199, SEQ ID NO:161, SEQ ID NO:163, SEQ ID NO:165, SEQ ID NO:167, SEQ ID NO:169, SEQ ID NO:171, SEQ ID NO:173, SEQ ID NO:175, SEQ ID NO:177, SEQ ID NO:179, SEQ ID NO:181, SEQ ID NO:183, SEQ ID NO:185, SEQ ID NO:187, SEQ ID NO:189, SEQ ID NO:191, SEQ ID NO:193, SEQ ID NO:195, SEQ ID NO:197, SEQ ID NO:199, SEQ ID NO:201, SEQ ID NO:203, SEQ ID NO:205, SEQ ID NO:207, SEQ ID NO:209, SEQ ID NO:211, SEQ ID NO:213, SEQ ID NO:215, SEQ ID NO:217, SEQ ID NO:219, SEQ ID NO:221, SEQ ID NO:223, SEQ ID NO:225, SEQ ID NO:227, SEQ ID NO:229, SEQ ID NO:231, SEQ ID NO:233, SEQ ID NO:235, SEQ ID NO:237, SEQ ID NO:239, SEQ ID NO:241, SEQ ID NO:243, SEQ ID NO:245, SEQ ID NO:247, SEQ ID NO:249, SEQ ID NO:251, SEQ ID NO:253, SEQ ID NO:255, SEQ ID NO:257, SEQ ID NO:259, SEQ ID NO:261,

SEQ ID NO:263, SEQ ID NO:265, SEQ ID NO:267, SEQ ID NO:269, SEQ ID NO:271, SEQ ID NO:273, SEQ ID NO:275, SEQ ID NO:277, SEQ ID NO:279, SEQ ID NO:281, SEQ ID NO:283, SEQ ID NO:285, SEQ ID NO:287, SEQ ID NO:289, SEQ ID NO:291, SEQ ID NO:293, SEQ ID NO:295, SEQ ID NO:297, SEQ ID NO:299, SEQ ID NO:301, SEQ ID NO:303, SEQ ID NO:305, SEQ ID NO:307, SEQ ID NO:309, SEQ ID NO:311, SEQ ID NO:313, SEQ ID NO:315, SEQ ID NO:317, SEQ ID NO:319, SEQ ID NO:321, SEQ ID NO:323, SEQ ID NO:325, SEQ ID NO:327, SEQ ID NO:329, SEQ ID NO:331, SEQ ID NO:333, SEQ ID NO:335, SEQ ID NO:337, SEQ ID NO:339, SEQ ID NO:341, SEQ ID NO:343, SEQ ID NO:345, SEQ ID NO:347, SEQ ID NO:349, SEQ ID NO:351, SEQ ID NO:353, SEQ ID NO:355, SEQ ID NO:357, SEQ ID NO:359, SEQ ID NO:361, SEQ ID NO:363, SEQ ID NO:365, SEQ ID NO:367, SEQ ID NO:369, SEQ ID NO:371, SEQ ID NO:373, SEQ ID NO:375, SEQ ID NO:377 or SEQ ID NO:379, over a region of at least about 50, 75,100, 150, 200, 250, 300, 350, 400, 450, 500, 550, 600, 650, 700, 750, 800, 850, 900, 950, 1000, 1050, 1100, 1150 or more residues, or the full length of a gene or a transcript,

and optionally the sequence comparison algorithm is a BLAST version 2.2.2 algorithm where a filtering setting is set to blastall -p blastp -d "nr pataa" -F F, and all other options are set to default;

(b) a nucleic acid encoding at least one polypeptide having a xylanase activity, wherein the nucleic acid comprises a sequence that hybridizes under stringent conditions to a nucleic acid comprising the sequence of SEQ ID NO:1, SEQ ID NO:3, SEQ ID NO:5, SEQ ID NO:7, SEQ ID NO:9, SEQ ID NO:11, SEQ ID NO:13, SEQ ID NO:15, SEQ ID NO:17, SEQ ID NO:19, SEQ ID NO:21, SEQ ID NO:23, SEQ ID NO:25, SEQ ID NO:27, SEQ ID NO:29, SEQ ID NO:31, SEQ ID NO:33, SEQ ID NO:35, SEQ ID NO:37, SEQ ID NO:39, SEQ ID NO:41, SEQ ID NO:43, SEQ ID NO:45, SEQ ID NO:47, SEQ ID NO:49, SEQ ID NO:51, SEQ ID NO:53, SEQ ID NO:55, SEQ ID NO:57, SEQ ID NO:59, SEQ ID NO:61, SEQ ID NO:63, SEQ ID NO:65, SEQ ID NO:67, SEQ ID NO:69, SEQ ID NO:71, SEQ ID NO:73, SEQ ID NO:75, SEQ ID NO:77, SEQ ID NO:79, SEQ ID NO:81, SEQ ID NO:83, SEQ ID NO:85, SEQ ID NO:87, SEQ ID NO:89, SEQ ID NO:91, SEQ ID NO:93, SEQ ID NO:95, SEQ ID NO:97, SEQ ID NO:99, SEQ ID NO:101, SEQ ID NO:103, SEQ ID NO:105; SEQ ID NO:107, SEQ ID NO:109, SEQ ID NO:111, SEQ ID NO:113, SEQ ID NO:115, SEQ ID NO:117, SEQ ID NO:119, SEQ ID NO:121, SEQ ID NO:123, SEQ ID NO:125, SEQ ID NO:127, SEQ ID NO:129, SEQ ID NO:131, SEQ ID NO:133, SEQ ID NO:135, SEQ ID

NO:137, SEQ ID NO:139, SEQ ID NO:141, SEQ ID NO:143, SEQ ID NO:145, SEQ ID NO:147, SEQ ID NO:149, SEQ ID NO:151, SEQ ID NO:153, SEQ ID NO:155, SEQ ID NO:157, SEQ ID NO:199, SEQ ID NO:161, SEQ ID NO:163, SEQ ID NO:165, SEQ ID NO:167, SEQ ID NO:169, SEQ ID NO:171, SEQ ID NO:173, SEQ ID NO:175, SEQ ID NO:177, SEQ ID NO:179, SEQ ID NO:181, SEQ ID NO:183, SEQ ID NO:185, SEQ ID NO:187, SEQ ID NO:189, SEQ ID NO:191, SEQ ID NO:193, SEQ ID NO:195, SEQ ID NO:197, SEQ ID NO:199, SEQ ID NO:201, SEQ ID NO:203, SEQ ID NO:205, SEQ ID NO:207, SEQ ID NO:209, SEQ ID NO:211, SEQ ID NO:213, SEQ ID NO:215, SEQ ID NO:217, SEQ ID NO:219, SEQ ID NO:221, SEQ ID NO:223, SEQ ID NO:225, SEQ ID NO:227, SEQ ID NO:229, SEQ ID NO:231, SEQ ID NO:233, SEQ ID NO:235, SEQ ID NO:237, SEQ ID NO:239, SEQ ID NO:241, SEQ ID NO:243, SEQ ID NO:245, SEQ ID NO:247, SEQ ID NO:249, SEQ ID NO:251, SEQ ID NO:253, SEQ ID NO:255, SEQ ID NO:257, SEQ ID NO:259, SEQ ID NO:261, SEQ ID NO:263, SEQ ID NO:265, SEQ ID NO:267, SEQ ID NO:269, SEQ ID NO:271, SEQ ID NO:273, SEQ ID NO:275, SEQ ID NO:277, SEQ ID NO:279, SEQ ID NO:281, SEQ ID NO:283, SEQ ID NO:285, SEQ ID NO:287, SEQ ID NO:289, SEQ ID NO:291, SEQ ID NO:293, SEQ ID NO:295, SEQ ID NO:297, SEQ ID NO:299, SEQ ID NO:301, SEQ ID NO:303, SEQ ID NO:305, SEQ ID NO:307, SEQ ID NO:309, SEQ ID NO:311, SEQ ID NO:313, SEQ ID NO:315, SEQ ID NO:317, SEQ ID NO:319, SEQ ID NO:321, SEQ ID NO:323, SEQ ID NO:325, SEQ ID NO:327, SEQ ID NO:329, SEQ ID NO:331, SEQ ID NO:333, SEQ ID NO:335, SEQ ID NO:337, SEQ ID NO:339, SEQ ID NO:341, SEQ ID NO:343, SEQ ID NO:345, SEQ ID NO:347, SEQ ID NO:349, SEQ ID NO:351, SEQ ID NO:353, SEQ ID NO:355, SEQ ID NO:357, SEQ ID NO:359, SEQ ID NO:361, SEQ ID NO:363, SEQ ID NO:365, SEQ ID NO:367, SEQ ID NO:369, SEQ ID NO:371, SEQ ID NO:373, SEQ ID NO:375, SEQ ID NO:377 or SEQ ID NO:379,

and optionally the stringent conditions comprise a wash step comprising a wash in 0.2X SSC at a temperature of about 65oC for about 15 minutes,

and optionally the nucleic acid is at least about 50, 75, 100, 150, 200, 300, 400, 500, 600, 700, 800, 900, 1000 or more residues in length or the full length of the gene or transcript;

(c) a nucleic acid encoding a polypeptide having xylanase activity, wherein the polypeptide comprises the amino acid sequence of SEQ ID NO:2, SEQ ID NO:4, SEQ ID NO:6, SEQ ID NO:8,

SEQ ID NO:10, SEQ ID NO:12, SEQ ID NO:14, SEQ ID NO:16, SEQ ID NO:18, SEQ ID NO:20, SEQ ID NO:22, SEQ ID NO:24, SEQ ID NO:26, SEQ ID NO:28, SEQ ID NO:30, SEQ ID NO:32, SEQ ID NO:34, SEQ ID NO:36, SEQ ID NO:38, SEQ ID NO:40, SEQ ID NO:42, SEQ ID NO:44, SEQ ID NO:46, SEQ ID NO:48, SEQ ID NO:50, SEQ ID NO:52, SEQ ID NO:54, SEQ ID NO:56, SEQ ID NO:58, SEQ ID NO:60, SEQ ID NO:62, SEQ ID NO:64, SEQ ID NO:66, SEQ ID NO:68, SEQ ID NO:70, SEQ ID NO:72, SEQ ID NO:74, SEQ ID NO:76, SEQ ID NO:78, SEQ ID NO:80, SEQ ID NO:82, SEQ ID NO:84, SEQ ID NO:86, SEQ ID NO:88, SEQ ID NO:90, SEQ ID NO:92, SEQ ID NO:94, SEQ ID NO:96, SEQ ID NO:98, SEQ ID NO:100, SEQ ID NO:102, SEQ ID NO:104, SEQ ID NO:106, SEQ ID NO:108, SEQ ID NO:110, SEQ ID NO:112, SEQ ID NO:114, SEQ ID NO:116, SEQ ID NO:118, SEQ ID NO:120, SEQ ID NO:122, SEQ ID NO:124, SEQ ID NO:126, SEQ ID NO:128, SEQ ID NO:130, SEQ ID NO:132; SEQ ID NO:134; SEQ ID NO:136; SEQ ID NO:138; SEQ ID NO:140; SEQ ID NO:142; SEQ ID NO:144; NO:146, SEQ ID NO:148, SEQ ID NO:150, SEQ ID NO:152, SEQ ID NO:154, SEQ ID NO:156, SEQ ID NO:158, SEQ ID NO:160, SEQ ID NO:162, SEQ ID NO:164, SEQ ID NO:166, SEQ ID NO:168, SEQ ID NO:170, SEQ ID NO:172, SEQ ID NO:174, SEQ ID NO:176, SEQ ID NO:178, SEQ ID NO:180, SEQ ID NO:182, SEQ ID NO:184, SEQ ID NO:186, SEQ ID NO:188, SEQ ID NO:190, SEQ ID NO:192, SEQ ID NO:194, SEQ ID NO:196, SEQ ID NO:198, SEQ ID NO:200, SEQ ID NO:202, SEQ ID NO:204, SEQ ID NO:206, SEQ ID NO:208, SEQ ID NO:210, SEQ ID NO:212, SEQ ID NO:214, SEQ ID NO:216, SEQ ID NO:218, SEQ ID NO:220, SEQ ID NO:222, SEQ ID NO:224, SEQ ID NO:226, SEQ ID NO:228, SEQ ID NO:230, SEQ ID NO:232, SEQ ID NO:234, SEQ ID NO:236, SEQ ID NO:238, SEQ ID NO:240, SEQ ID NO:242, SEQ ID NO:244, SEQ ID NO:246, SEQ ID NO:248, SEQ ID NO:250, SEQ ID NO:252, SEQ ID NO:254, SEQ ID NO:256, SEQ ID NO:258, SEQ ID NO:260, SEQ ID NO:262, SEQ ID NO:264, SEQ ID NO:266, SEQ ID NO:268, SEQ ID NO:270, SEQ ID NO:272, SEQ ID NO:274, SEQ ID NO:276, SEQ ID NO:278, SEQ ID NO:280, SEQ ID NO:282, SEQ ID NO:284, SEQ ID NO:286, SEQ ID NO:288, SEQ ID NO:290, SEQ ID NO:292, SEQ ID NO:294, SEQ ID NO:296, SEQ ID NO:298, SEQ ID NO:300, SEQ ID NO:302, SEQ ID NO:304, SEQ ID NO:306, SEQ ID NO:308, SEQ ID NO:310, SEQ ID NO:312, SEQ ID NO:314, SEQ ID NO:316, SEQ ID NO:318, SEQ ID NO:320, SEQ ID NO:322, SEQ ID NO:324, SEQ ID NO:326, SEQ ID NO:328, SEQ ID NO:330, SEQ ID NO:332, SEQ ID NO:334, SEQ ID

NO:336, SEQ ID NO:338, SEQ ID NO:340, SEQ ID NO:342, SEQ ID NO:344, SEQ ID NO:346, SEQ ID NO:348, SEQ ID NO:350, SEQ ID NO:352, SEQ ID NO:354, SEQ ID NO:356, SEQ ID NO:358, SEQ ID NO:360, SEQ ID NO:362, SEQ ID NO:364, SEQ ID NO:366, SEQ ID NO:368, SEQ ID NO:370, SEQ ID NO:372, SEQ ID NO:374, SEQ ID NO:376, SEQ ID NO:378 or SEQ ID NO:380, or enzymatically active fragments thereof;

(d) a nucleic acid encoding a polypeptide having xylanase activity made by a method comprising:

(a) (i) providing a template nucleic acid comprising the nucleic acid sequence of (a), (b) or (c); (ii) modifying, deleting or adding one or more nucleotides in the template sequence, or a combination thereof, to generate a variant of the template nucleic acid; and (iii) expressing the variant of the template nucleic acid to generate a recombinant polypeptide and testing the recombinant polypeptide for xylanase activity; or

(b) (i) providing a template nucleic acid comprising the nucleic acid sequence of (a), (b) or (c) encoding a polypeptide having a xylanase activity; and, (ii) modifying, deleting or adding one or more nucleotides in the template sequence, or a combination thereof, to generate a variant of the template nucleic acid, wherein the variant nucleic acid encodes a polypeptide that retains xylanase activity under conditions comprising a temperature of at least about 70°C, 80°C or 90°C or more, and a basic pH of at least about pH 8.0, pH 8.5, pH 9, pH 9.5, pH 10, pH 10.5, pH 11 or more,

wherein optionally the modifications, additions or deletions are introduced by a method comprising error-prone PCR, shuffling, oligonucleotide-directed mutagenesis, assembly PCR, sexual PCR mutagenesis, *in vivo* mutagenesis, cassette mutagenesis, recursive ensemble mutagenesis, exponential ensemble mutagenesis, site-specific mutagenesis, gene reassembly, Gene Site Saturation Mutagenesis (GSSM), synthetic ligation reassembly (SLR) and a combination thereof;

and optionally wherein the modifications, additions or deletions are introduced by a method comprising recombination, recursive sequence recombination, phosphothioate-modified DNA mutagenesis, uracil-containing template mutagenesis, gapped duplex mutagenesis, point mismatch repair mutagenesis, repair-deficient host strain mutagenesis, chemical mutagenesis,

radiogenic mutagenesis, deletion mutagenesis, restriction-selection mutagenesis, restriction-purification mutagenesis, artificial gene synthesis, ensemble mutagenesis, chimeric nucleic acid multimer creation and a combination thereof;

(e) the nucleic acid of (a), (b), (c) or (d) encoding a xylanase but lacking a signal sequence or carbohydrate binding module;

(f) the nucleic acid of (a), (b), (c), (d) or (e) encoding a xylanase but having a heterologous sequence, wherein optionally the heterologous sequence comprises a heterologous signal sequence, carbohydrate binding module, catalytic domain (CD), or a combination thereof, and optionally the heterologous signal sequence, carbohydrate binding module or catalytic domain (CD) is derived from another xylanase or a non-xylanase enzyme; or

(g) a nucleic acid comprising a sequence complementary to (a), (b), (c), (d), (e) or (f);

wherein optionally the xylanase of (a), (b), (c), (d), (e), or (f) retains activity under conditions comprising a temperature of at least about 85°C and a basic pH of at least about pH 11;

and optionally the xylanase activity comprises catalyzing hydrolysis of internal β-1,4-xylosidic linkages; an endo-1,4-beta-xylanase activity; hydrolyzing a xylan, an arabinoxylan or a water soluble arabinoxylan to produce a smaller molecular weight xylose and xylo-oligomer; hydrolyzing a xylan, an arabinoxylan or a water soluble arabinoxylan in a dough or a bread product; hydrolyzing polysaccharides comprising 1,4-β-glycoside-linked D-xylopyranoses; hydrolyzing hemicelluloses; hydrolyzing hemicelluloses in a wood, a wood product, a wood pulp, a Kraft pulp, a paper pulp, a paper, a paper product, or a combination thereof; catalyzing hydrolysis of xylans in a feed or a food product, or a food, feed or nutritional supplement; catalyzing hydrolysis of xylans in a cereal-based animal food or feed, a wort or a beer, a milk or a milk product, a fruit or a vegetable; catalyzing hydrolysis of xylans in a microbial cell or a plant cell;

and optionally the xylanase activity is thermostable, or the polypeptide retains a xylanase activity under conditions comprising a temperature range of between about 37°C to about 95°C, or between about 55°C to about 85°C, or between about 70°C to about 75°C, or between about 70°C to about 95°C, or between about 90°C to about 95°C;

and optionally the xylanase activity is thermotolerant, or the polypeptide retains a xylanase activity after exposure to a temperature in the range from greater than 37°C to about 95°C, from greater than 55°C to about 85°C, or between about 70°C to about 75°C, or from greater than 90°C to about 95°C;

and optionally the polypeptide retains a xylanase activity under conditions comprising about pH 6.5, pH 6.0, pH 5.5, 5.0, pH 4.5 or 4.0, or the polypeptide retains a xylanase activity under conditions comprising about pH 7.5, pH 8.0, pH 8.5, pH 9, pH 9.5, pH 10 or pH 10.5.

Claim 220 (new): The composition of claim 218, wherein the xylanase comprises

(i) a polypeptide having xylanase activity, wherein the polypeptide comprises an amino acid sequence having at least 50%, 51%, 52%, 53%, 54%, 55%, 56%, 57%, 58%, 59%, 60%, 61%, 62%, 63%, 64%, 65%, 66%, 67%, 68%, 69%, 70%, 71%, 72%, 73%, 74%, 75%, 76%, 77%, 78%, 79%, 80%, 81%, 82%, 83%, 84%, 85%, 86%, 87%, 88%, 89%, 90%, 91%, 92%, 93%, 94%, 95%, 96%, 97%, 98%, 99%, or more, or has 100% sequence identity to the amino acid sequence of SEQ ID NO:2, SEQ ID NO:4, SEQ ID NO:6, SEQ ID NO:8, SEQ ID NO:10, SEQ ID NO:12, SEQ ID NO:14, SEQ ID NO:16, SEQ ID NO:18, SEQ ID NO:20, SEQ ID NO:22, SEQ ID NO:24, SEQ ID NO:26, SEQ ID NO:28, SEQ ID NO:30, SEQ ID NO:32, SEQ ID NO:34, SEQ ID NO:36, SEQ ID NO:38, SEQ ID NO:40, SEQ ID NO:42, SEQ ID NO:44, SEQ ID NO:46, SEQ ID NO:48, SEQ ID NO:50, SEQ ID NO:52, SEQ ID NO:54, SEQ ID NO:56, SEQ ID NO:58, SEQ ID NO:60, SEQ ID NO:62, SEQ ID NO:64, SEQ ID NO:66, SEQ ID NO:68, SEQ ID NO:70, SEQ ID NO:72, SEQ ID NO:74, SEQ ID NO:76, SEQ ID NO:78, SEQ ID NO:80, SEQ ID NO:82, SEQ ID NO:84, SEQ ID NO:86, SEQ ID NO:88, SEQ ID NO:90, SEQ ID NO:92, SEQ ID NO:94, SEQ ID NO:96, SEQ ID NO:98, SEQ ID NO:100, SEQ ID NO:102, SEQ ID NO:104, SEQ ID NO:106, SEQ ID NO:108, SEQ ID NO:110, SEQ ID NO:112, SEQ ID NO:114, SEQ ID NO:116, SEQ ID NO:118, SEQ ID NO:120, SEQ ID NO:122, SEQ ID NO:124, SEQ ID NO:126, SEQ ID NO:128, SEQ ID NO:130, SEQ ID NO:132; SEQ ID NO:134; SEQ ID NO:136; SEQ ID NO:138; SEQ ID NO:140; SEQ ID NO:142; SEQ ID NO:144; NO:146, SEQ ID

NO:148, SEQ ID NO:150, SEQ ID NO:152, SEQ ID NO:154, SEQ ID NO:156, SEQ ID NO:158, SEQ ID NO:160, SEQ ID NO:162, SEQ ID NO:164, SEQ ID NO:166, SEQ ID NO:168, SEQ ID NO:170, SEQ ID NO:172, SEQ ID NO:174, SEQ ID NO:176, SEQ ID NO:178, SEQ ID NO:180, SEQ ID NO:182, SEQ ID NO:184, SEQ ID NO:186, SEQ ID NO:188, SEQ ID NO:190, SEQ ID NO:192, SEQ ID NO:194, SEQ ID NO:196, SEQ ID NO:198, SEQ ID NO:200, SEQ ID NO:202, SEQ ID NO:204, SEQ ID NO:206, SEQ ID NO:208, SEQ ID NO:210, SEQ ID NO:212, SEQ ID NO:214, SEQ ID NO:216, SEQ ID NO:218, SEQ ID NO:220, SEQ ID NO:222, SEQ ID NO:224, SEQ ID NO:226, SEQ ID NO:228, SEQ ID NO:230, SEQ ID NO:232, SEQ ID NO:234, SEQ ID NO:236, SEQ ID NO:238, SEQ ID NO:240, SEQ ID NO:242, SEQ ID NO:244, SEQ ID NO:246, SEQ ID NO:248, SEQ ID NO:250, SEQ ID NO:252, SEQ ID NO:254, SEQ ID NO:256, SEQ ID NO:258, SEQ ID NO:260, SEQ ID NO:262, SEQ ID NO:264, SEQ ID NO:266, SEQ ID NO:268, SEQ ID NO:270, SEQ ID NO:272, SEQ ID NO:274, SEQ ID NO:276, SEQ ID NO:278, SEQ ID NO:280, SEQ ID NO:282, SEQ ID NO:284, SEQ ID NO:286, SEQ ID NO:288, SEQ ID NO:290, SEQ ID NO:292, SEQ ID NO:294, SEQ ID NO:296, SEQ ID NO:298, SEQ ID NO:300, SEQ ID NO:302, SEQ ID NO:304, SEQ ID NO:306, SEQ ID NO:308, SEQ ID NO:310, SEQ ID NO:312, SEQ ID NO:314, SEQ ID NO:316, SEQ ID NO:318, SEQ ID NO:320, SEQ ID NO:322, SEQ ID NO:324, SEQ ID NO:326, SEQ ID NO:328, SEQ ID NO:330, SEQ ID NO:332, SEQ ID NO:334, SEQ ID NO:336, SEQ ID NO:338, SEQ ID NO:340, SEQ ID NO:342, SEQ ID NO:344, SEQ ID NO:346, SEQ ID NO:348, SEQ ID NO:350, SEQ ID NO:352, SEQ ID NO:354, SEQ ID NO:356, SEQ ID NO:358, SEQ ID NO:360, SEQ ID NO:362, SEQ ID NO:364, SEQ ID NO:366, SEQ ID NO:368, SEQ ID NO:370, SEQ ID NO:372, SEQ ID NO:374, SEQ ID NO:376, SEQ ID NO:378 or SEQ ID NO:380, over a region of at least about 20, 25, 30, 35, 40, 50, 75, 100, 150, 200, 250, 300 or more residues, or over the full length of the polypeptide,

wherein optionally the sequence identities are determined by analysis with a sequence comparison algorithm or by a visual inspection;

(ii) a polypeptide having xylanase activity, wherein the polypeptide comprises an amino acid sequence encoded by a nucleic acid having a sequence as set forth in claim 219

(iii)made by a method comprising:

providing a template sequence comprising the amino acid sequence of (a) or (b); (ii) modifying, deleting or adding one or more amino acids in the template sequence, or a combination thereof, to generate a variant of the template sequence; and (iii) expressing the variant of the template sequence to generate a recombinant polypeptide and testing the recombinant polypeptide for xylanase activity;

wherein optionally the polypeptide that retains xylanase activity under conditions comprising a temperature of at least about 70°C, 80°C or 90°C or more, and a basic pH of at least about pH 8.0, pH 8.5, pH 9, pH 9.5, pH 10, pH 10.5, pH 11 or more,

and optionally the modifications, additions or deletions are introduced by a method comprising error-prone PCR, shuffling, oligonucleotide-directed mutagenesis, assembly PCR, sexual PCR mutagenesis, *in vivo* mutagenesis, cassette mutagenesis, recursive ensemble mutagenesis, exponential ensemble mutagenesis, site-specific mutagenesis, gene reassembly, Gene Site Saturation Mutagenesis (GSSM), synthetic ligation reassembly (SLR) and a combination thereof;

and optionally wherein the modifications, additions or deletions are introduced by a method comprising recombination, recursive sequence recombination, phosphothioate-modified DNA mutagenesis, uracil-containing template mutagenesis, gapped duplex mutagenesis, point mismatch repair mutagenesis, repair-deficient host strain mutagenesis, chemical mutagenesis, radiogenic mutagenesis, deletion mutagenesis, restriction-selection mutagenesis, restriction-purification mutagenesis, artificial gene synthesis, ensemble mutagenesis, chimeric nucleic acid multimer creation and a combination thereof;

(iv)the polypeptide of (a), (b) or (c) but lacking a signal sequence or carbohydrate binding module; or

(v) the polypeptide of (a), (b), (c) or (d), and having a heterologous sequence, wherein optionally the heterologous sequence comprises a heterologous signal sequence, carbohydrate binding module, catalytic domain (CD), or a combination thereof, wherein optionally the heterologous signal sequence, carbohydrate binding module or catalytic domain (CD) is derived from another xylanase or a non-xylanase enzyme,

wherein optionally the xylanase of (a), (b), (c) or (d) retains activity under conditions comprising a temperature of at least about 85°C and a basic pH of at least about pH 11;

and optionally the xylanase activity comprises catalyzing hydrolysis of internal β-1,4-xylosidic linkages; an endo-1,4-beta-xylanase activity; hydrolyzing a xylan, an arabinoxylan or a water soluble arabinoxylan to produce a smaller molecular weight xylose and xylo-oligomer; hydrolyzing a xylan, an arabinoxylan or a water soluble arabinoxylan in a dough or a bread product; hydrolyzing polysaccharides comprising 1,4-β-glycoside-linked D-xylopyranoses; hydrolyzing hemicelluloses; hydrolyzing hemicelluloses in a wood, a wood product, a wood pulp, a Kraft pulp, a paper pulp, a paper, a paper product, or a combination thereof; catalyzing hydrolysis of xylans in a feed or a food product, or a food, feed or nutritional supplement; catalyzing hydrolysis of xylans in a cereal-based animal food or feed, a wort or a beer, a milk or a milk product, a fruit or a vegetable; catalyzing hydrolysis of xylans in a microbial cell or a plant cell;

wherein optionally the xylanase activity is thermostable, or the polypeptide retains a xylanase activity under conditions comprising a temperature range of between about 37°C to about 95°C, or between about 55°C to about 85°C, or between about 70°C to about 75°C, or between about 70°C to about 95°C, or between about 90°C to about 95°C;

and optionally the xylanase activity is thermotolerant, or the polypeptide retains a xylanase activity after exposure to a temperature in the range from greater than 37°C to about 95°C, from greater than 55°C to about 85°C, or between about 70°C to about 75°C, or from greater than 90°C to about 95°C;

and optionally the xylanase activity comprises a specific activity at about 37°C in the range from about 100 to about 1000 units per milligram of protein, from about 500 to about 750 units per milligram of protein, from about 500 to about 1200 units per milligram of protein, or from about 750 to about 1000 units per milligram of protein;

and optionally the thermotolerance comprises retention of at least half of the specific activity of the xylanase at 37°C after being heated to an elevated temperature;

and optionally the thermotolerance comprises retention of specific activity at 37°C in the range from about 500 to about 1200 units per milligram of protein after being heated to an elevated temperature;

and optionally the polypeptide comprises at least one glycosylation site, and optionally the glycosylation is an N-linked glycosylation, or the polypeptide is glycosylated after being expressed in a *P. pastoris* or a *S. pombe*;

and optionally the polypeptide retains a xylanase activity under conditions comprising about pH 6.5, pH 6.0, pH 5.5, 5.0, pH 4.5 or 4.0, or the polypeptide retains a xylanase activity under conditions comprising about pH 7.5, pH 8.0, pH 8.5, pH 9, pH 9.5, pH 10 or pH 10.5.

Claim 221 (new): A method for hydrolyzing, breaking up or disrupting a xylan-comprising composition comprising contacting the xylan-comprising composition with the composition of claim 218,

wherein the xylan-comprising composition comprises a wood, a wood product, a wood pulp, a Kraft pulp, a paper, a paper product, a paper pulp, or a combination thereof,

and wherein optionally the wood, wood product, wood pulp, Kraft pulp, paper, paper product, paper pulp, or combination thereof, comprises a softwood and/or a hardwood, or the wood, wood product, wood pulp, Kraft pulp, paper, paper product, paper pulp, or combination thereof, is derived from a softwood and/or a hardwood.

Claim 222 (new): The method of claim 221, wherein the contacting step comprises: contacting the xylan-comprising composition with the composition under conditions comprising a temperature of at least about 85°C and a basic pH of at least about pH 11, or first contacting the xylan-comprising composition with the composition and then elevating the temperature and/or pH to at least about 85°C and/or a basic pH of at least about pH 11.

Claim 223 (new): A method for reducing lignin in a wood, a wood product, a wood pulp, a Kraft pulp, a paper, a paper product, a paper pulp, or a combination thereof, comprising

contacting the wood, wood product, wood pulp, Kraft pulp, paper, paper product, paper pulp product, or combination thereof, with the composition of claim 218,

wherein optionally the wood, wood product, wood pulp, Kraft pulp, paper, paper product, paper pulp, or combination thereof, comprises a softwood and/or a hardwood, or the wood, wood product, wood pulp, Kraft pulp, paper, paper product, paper pulp, or combination thereof, is derived from a softwood and/or a hardwood.

Claim 224 (new): The method of claim 223, wherein the contacting step comprises contacting the wood, wood product, wood pulp, Kraft pulp, paper, paper product, paper pulp product, or combination thereof with the composition under conditions comprising a temperature of at least about 85°C and a basic pH of at least about pH 11.

Claim 225 (new): A method for releasing lignin from a wood, a wood product, a wood pulp, a Kraft pulp, a paper, a paper product, a paper pulp, or a combination thereof, comprising contacting the wood, wood product, wood pulp, Kraft pulp, paper, paper product, paper pulp product, or combination thereof, with the composition of claim 218,

wherein optionally the wood, wood product, wood pulp, Kraft pulp, paper, paper product, paper pulp, or combination thereof, comprises a softwood and/or a hardwood, or the wood, wood product, wood pulp, Kraft pulp, paper, paper product, paper pulp, or combination thereof, is derived from a softwood and/or a hardwood.

Claim 226 (new): The method of claim 225, wherein the contacting step comprises contacting the wood, wood product, wood pulp, Kraft pulp, paper, paper product, paper pulp product, or combination thereof with the composition under conditions comprising a temperature of at least about 85°C and a basic pH of at least about pH 11.

Claim 227 (new): A method for treating a wood, a wood product, a wood pulp, a Kraft pulp, a paper product, a paper, a paper pulp, or a combination thereof, comprising contacting the wood,

wood product, wood pulp, Kraft pulp, paper, paper product, paper pulp product, or combination thereof, with the composition of claim 218,

wherein optionally the wood, wood product, wood pulp, Kraft pulp, paper, paper product, paper pulp, or combination thereof, comprises a softwood and/or a hardwood, or the wood, wood product, wood pulp, Kraft pulp, paper, paper product, paper pulp, or combination thereof, is derived from a softwood and/or a hardwood,

and wherein optionally after the treatment the pulp has a consistency of at least about 10%, or at least about 32%.

Claim 228 (new): The method of claim 227, wherein the contacting step comprises contacting the wood, wood product, wood pulp, Kraft pulp, paper, paper product, paper pulp product, or combination thereof with the composition under conditions comprising a temperature of at least about 85°C and a basic pH of at least about pH 11.

Claim 229 (new): A method for decoloring a wood, a wood product, a wood pulp, a Kraft pulp, a paper, a paper product, a paper pulp, or a combination thereof, comprising contacting the wood, wood product, wood pulp, Kraft pulp, paper, paper product, paper pulp product, or combination thereof, with the composition of claim 218,

wherein optionally the wood, wood product, wood pulp, Kraft pulp, paper, paper product, paper pulp, or combination thereof, comprises a softwood and/or a hardwood, or the wood, wood product, wood pulp, Kraft pulp, paper, paper product, paper pulp, or combination thereof, is derived from a softwood and/or a hardwood.

Claim 230 (new): The method of claim 229, wherein the contacting step comprises contacting the wood, wood product, wood pulp, Kraft pulp, paper, paper product, paper pulp product, or combination thereof with the composition under conditions comprising a temperature of at least about 85°C and a basic pH of at least about pH 11.

Claim 231 (new): A method for reducing the use of bleaching chemicals in a bleaching process of a wood, a wood product, a wood pulp, a Kraft pulp, a paper, a paper product, a paper pulp, or a combination thereof, comprising contacting the wood, wood product, wood pulp, Kraft pulp, paper, paper product, paper pulp product, or combination thereof, with the composition of claim 218,

wherein optionally the wood, wood product, wood pulp, Kraft pulp, paper, paper product, paper pulp, or combination thereof, comprises a softwood and/or a hardwood, or the wood, wood product, wood pulp, Kraft pulp, paper, paper product, paper pulp, or combination thereof, is derived from a softwood and/or a hardwood,

and wherein optionally the bleaching chemical comprises a chlorine, a chlorine dioxide, a caustic, a peroxide, or any combination thereof.

Claim 232 (new): The method of claim 231, wherein the contacting step comprises contacting the wood, wood product, wood pulp, Kraft pulp, paper, paper product, paper pulp product, or combination thereof with the composition under conditions comprising a temperature of at least about 85°C and a basic pH of at least about pH 11.

Claim 233 (new): A method for deinking wood, wood product, wood pulp, Kraft pulp, paper, paper product, paper pulp or a combination thereof, comprising contacting the wood, wood product, wood pulp, Kraft pulp, paper, paper product, paper pulp product, or combination thereof, with the composition of claim 218,

wherein optionally the wood, wood product, wood pulp, Kraft pulp, paper, paper product, paper pulp, or combination thereof, comprises a softwood and/or a hardwood, or the wood, wood product, wood pulp, Kraft pulp, paper, paper product, paper pulp, or combination thereof, is derived from a softwood and/or a hardwood.

Claim 234 (new): The method of claim 233, wherein the contacting step comprises contacting the wood, wood product, wood pulp, Kraft pulp, paper, paper product, paper pulp product, or

combination thereof with the composition under conditions comprising a temperature of at least about 85°C and a basic pH of at least about pH 11.

Claim 235 (new): A composition comprising a wood, a wood product, a wood pulp, a Kraft pulp, a paper, a paper product, a paper pulp, or a combination thereof, and comprising the composition of claim 218,

wherein optionally the wood, wood product, wood pulp, Kraft pulp, paper, paper product, paper pulp, or combination thereof, comprises a softwood and/or a hardwood, or the wood, wood product, wood pulp, Kraft pulp, paper, paper product, paper pulp, or combination thereof, derived from a softwood and/or a hardwood.

Claim 236 (new): A method for making ethanol comprising contacting a starch-comprising composition with the composition of claim 218.

Claim 237 (new): The method of claim 236, wherein the contacting step comprises contacting the starch-comprising composition with the composition under conditions comprising a temperature of at least about 85°C and a basic pH of at least about pH 11.

Claim 238 (new): A composition comprising an ethanol and the composition of claim 218.

Claim 239 (new): A method for bleaching a wood, a wood product, a wood pulp, a Kraft pulp, a paper, a paper product, a paper pulp, or a combination thereof, comprising the composition of claim 218, wherein optionally the wood, wood product, wood pulp, Kraft pulp, paper, paper product, paper pulp, or combination thereof, comprises a softwood and/or a hardwood, or the wood, wood product, wood pulp, Kraft pulp, paper, paper product, paper pulp, or combination thereof, derived from a softwood and/or a hardwood.

Claim 240 (new): The method of claim 239, wherein the contacting step comprises contacting the wood, wood product, wood pulp, Kraft pulp, paper, paper product, paper pulp, or

combination thereof with the composition under conditions comprising a temperature of at least about 85°C and a basic pH of at least about pH 11.